

**IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE**

DELAWARE STATE SPORTSMEN'S ASSOCIATION, INC; BRIDGEVILLE RIFLE & PISTOL CLUB, LTD.; DELAWARE RIFLE AND PISTOL CLUB; DELAWARE ASSOCIATION OF FEDERAL FIREARMS LICENSEES; MADONNA M. NEDZA; CECIL CURTIS CLEMENTS; JAMES E. HOSFELT, JR; BRUCE C. SMITH; VICKIE LYNN PRICKETT; and FRANK M. NEDZA,

Plaintiffs,

v.

DELAWARE DEPARTMENT OF SAFETY AND HOMELAND SECURITY; NATHANIAL MCQUEEN JR. in his official capacity as Cabinet Secretary, Delaware Department of Safety and Homeland Security; and COL. MELISSA ZEBLEY in her official capacity as superintendent of the Delaware State Police,

Defendants.

C.A. No. 1:22-cv-00951-RGA
(Consolidated)

GABRIEL GRAY; WILLIAM TAYLOR; DJJAMS LLC; FIREARMS POLICY COALITION, INC. and SECOND AMENDMENT FOUNDATION,

Plaintiffs,

v.

KATHY JENNINGS, Attorney General of Delaware,

Defendant.

**DECLARATION OF LUCY P. ALLEN IN SUPPORT OF DEFENDANTS'
OPPOSITION TO PLAINTIFFS' MOTION FOR PRELIMINARY INJUNCTION**

I, Lucy P. Allen, the undersigned, declare as follows:

1. I am a Managing Director of NERA Economic Consulting (“NERA”), a member of NERA’s Securities and Finance Practice, and Chair of NERA’s Product Liability and Mass Torts Practice. NERA provides practical economic advice related to highly complex business and legal issues arising from competition, regulation, public policy, strategy, finance, and litigation. NERA was established in 1961 and now employs approximately 500 people in more than 20 offices worldwide.

2. In my over 25 years at NERA, I have been engaged as an economic consultant or expert witness in numerous projects involving economics and statistics. I have been qualified as an expert and testified in court on various economic and statistical issues relating to the flow of guns into the criminal market. I have testified at trials in Federal and State Courts, before the New York City Council Public Safety Committee, the American Arbitration Association, and the Judicial Arbitration Mediation Service, as well as in depositions.

3. I have an A.B. from Stanford University, an M.B.A. from Yale University, and M.A. and M. Phil. degrees in Economics, also from Yale University. Prior to joining NERA, I was an Economist for both President George H. W. Bush’s and President Bill Clinton’s Council of Economic Advisers. My resume with recent publications and testifying experience is included as **Exhibit A**.

4. I have been asked by the Delaware Department of Justice to address the following issues: (a) the number of rounds of ammunition fired by individuals using a gun in self-defense;¹

¹ I have also been asked to analyze the use of assault rifles by private citizens in active shooter incidents according to the FBI’s “Active Shooter Incidents” reports and the percent of incidents in which rifles were used in self-defense according to The Heritage Foundation’s “Defensive Gun Uses in the U.S.” database.

and (b) the outcomes when assault weapons and large-capacity magazines are used in public mass shootings, including the associated number of casualties.

OPINIONS

A. Use of Guns in Self-Defense

1. The number of rounds used by individuals in self-defense

5. Plaintiffs claim the “large-capacity magazines” (magazines capable of holding more than seventeen rounds) and “assault weapons” covered by Delaware’s House Bill 450 (“HB 450”) and Senate Substitute 1 for Senate Bill 6 (“SS 1 for SB 6”)² are commonly used for lawful purposes, including for self-defense.³

6. The number of rounds commonly needed by individuals to defend themselves cannot be practically or ethically determined with controlled scientific experiments and there is no source that systematically tracks or maintains data on the number of rounds fired by individuals in self-defense. Due to these limitations, I have analyzed available data sources to estimate the number of rounds fired by individuals to defend themselves. In particular, I have analyzed data from the NRA Institute for Legislative Action, as well as my own study of news reports on incidents of self-defense with a firearm. In all, I have analyzed almost 1,000 incidents

² Under Delaware’s HB 450, a firearm is classified as an assault weapon if it is one of 63 firearm types and models listed, if it is a copy of one of the listed firearms, or if it has “certain features.” Examples of assault weapons include the “Daewoo AR 100,” “Bushmaster semi-auto rifle,” “Colt AR-15,” and the “UZI pistol.” A semiautomatic, centerfire rifle that can accept a detachable magazine can also be considered an assault weapon if it includes certain features, including a “pistol grip,” a “thumbhole stock,” a “flash suppressor,” or a “folding or telescoping stock.” See Delaware’s HB 450 and Amended Complaint for Declaratory and Injunctive Relief, filed September 9, 2022, ¶¶ 42-45.

³ See, for example, Amended Complaint for Declaratory and Injunctive Relief, filed September 9, 2022, ¶¶ 61 and 72, and Complaint, filed November 16, 2022, ¶¶ 57 and 63.

of self-defense with a firearm and found that it is extremely rare for a person, when using a firearm in self-defense, to fire more than seventeen rounds.

7. The NRA maintains a database of “Armed Citizen” stories describing private citizens who have successfully defended themselves, or others, using a firearm (“NRA Armed Citizen database”). According to the NRA, the “Armed Citizen” stories “highlight accounts of law-abiding gun owners in America using their Second Amendment rights to defend self, home and family.”⁴ Although the methodology used to compile the NRA Armed Citizen database of stories is not explicitly detailed by the NRA, the NRA Armed Citizen database is a useful data source in this matter for at least three reasons. First, the NRA Armed Citizen database was the largest collection of accounts of citizen self-defense compiled by others that I was able to find.⁵ Second, the incidents listed in the NRA Armed Citizen database highlight the very conduct that Plaintiffs claim the Delaware law impedes (*i.e.*, the use of firearms by law-abiding citizens for self-defense).⁶ Third, the NRA Armed Citizen database is compiled by an entity that actively opposes restrictions on magazine capacity and restrictions on the possession and use of firearms in general.⁷ In light of the positions taken by the entity compiling the data, I would expect that any selection bias would be in favor of stories that put use of guns in self-defense in the best possible light and might highlight the apparent need of guns and/or multiple rounds in self-defense incidents.

⁴ NRA Institute for Legislative Action, Armed Citizens, <https://www.nraila.org/gun-laws/armed-citizen/>, accessed May 28, 2017.

⁵ Note that in 2020, after the time my research was conducted, The Heritage Foundation began an online database of its own sample of defensive gun use incidents (<https://datavisualizations.heritage.org/firearms/defensive-gun-uses-in-the-us>).

⁶ Amended Complaint, ¶¶ 1-7.

⁷ See, for example, NRA Civil Rights Defense Fund website, <http://www.nradefensefund.org/current-litigation.aspx>, accessed October 12, 2018.

8. My team and I performed an analysis of incidents in the NRA Armed Citizen database that occurred between January 2011 and May 2017.⁸ For each incident, the city/county, state, venue (whether the incident occurred on the street, in the home, or elsewhere) and the number of shots fired were tabulated.⁹ The information was gathered for each incident from both the NRA synopsis and, where available, an additional news story. An additional news story was found for over 95% of the incidents in the NRA Armed Citizen database.

9. According to this analysis of incidents in the NRA Armed Citizen database, it is extremely rare for a person, when using firearms in self-defense, to fire more than seventeen rounds. Out of 736 incidents, there were no incidents in which the defender was reported to have fired more than 17 bullets and only two incidents (0.3% of all incidents), in which the defender was reported to have fired more than 10 bullets.¹⁰ Defenders fired 2.2 shots on average.¹¹ In 18.2% of incidents, the defender did not fire any shots. These incidents highlight the fact that in

⁸ My collection and coding of the NRA Armed Citizen stories was last performed in mid-2017.

⁹ The following incidents were excluded from the analysis: (1) duplicate incidents, (2) wild animal attacks, and (3) one incident where the supposed victim later pleaded guilty to covering up a murder. When the exact number of shots fired was not specified, we used the average for the most relevant incidents with known number of shots. For example, if the story stated that “shots were fired” this would indicate that at least two shots were fired and thus we used the average number of shots fired in all incidents in which two or more shots were fired and the number of shots was specified.

¹⁰ Note that the only two incidents with more than 10 bullets fired were added to the NRA Armed Citizen database in 2016 and 2017 after an earlier analysis that I had conducted of the database had been submitted to and cited by the Court in *Kolbe v. O’Malley*, Case No. CCB-13-2841 (Dkt. 79).

¹¹ Note that the analysis is focused on shots fired when using a gun in self-defense and therefore the average includes instances when no shots are fired. If one calculates the average excluding incidents of self-defense with a gun without firing shots, the average is still low, 2.6 shots when at least one shot is fired.

many instances defenders are able to defend themselves without firing any shots. For example, according to one of the incidents in the NRA Armed Citizen Database:

“A man entered a Shell station in New Orleans, La. and attempted to rob a cashier, by claiming he was carrying a gun. The cashier responded by retrieving a gun and leveling it at the thief, prompting the criminal to flee. (The Times Picayune, New Orleans, La. 09/02/15)”¹²

10. For incidents occurring in the home (56% of total), defenders fired an average of 2.1 shots, and fired no shots in 16.1% of incidents. For incidents occurring outside the home (44%) of total, defenders fired an average of 2.2 shots, and fired no shots in 20.9% of incidents.¹³

The table below summarizes these findings:

¹² “Gas station clerk scares off robber,” NRA-ILA Armed Citizen, September 9, 2015.

¹³ A separate study of incidents in the NRA Armed Citizen database for an earlier period (the five-year period from 1997 through 2001) found similar results. Specifically, this study found that, on average, 2.2 shots were fired by defenders and that in 28% of incidents of armed citizens defending themselves the individuals fired no shots at all. See, Claude Werner, “The Armed Citizen – A Five Year Analysis,”

<https://tacticalprofessor.files.wordpress.com/2014/12/tac-5-year-w-tables.pdf>, accessed January 26, 2023.

**Number of Shots Fired in Self-Defense
Based on NRA Armed Citizen Incidents in the United States
January 2011 - May 2017**

	Shots Fired by Individual in Self-Defense		
	Overall	Incidents in Home	Outside the Home
Average Number of Shots Fired	2.2	2.1	2.2
Number of Incidents with No Shots Fired	134	66	68
Percent of Incidents with No Shots Fired	18.2%	16.1%	20.9%
Number of Incidents with >10 Shots Fired	2	2	0
Percent of Incidents with >10 Shots Fired	0.3%	0.5%	0.0%
Number of Incidents with >17 Shots Fired	0	0	0
Percent of Incidents with >17 Shots Fired	0.0%	0.0%	0.0%

Notes and Sources:

Data from NRA Armed Citizen database covering 736 incidents (of which 411 were in the home) from January 2011 through May 2017. Excludes duplicate incidents, wild animal attacks and one incident where the supposed victim later pleaded guilty to covering up a murder.

11. In addition to our analysis of incidents in the NRA Armed Citizen database, we performed a systematic, scientific study of news reports on incidents of self-defense with a firearm in the home, focusing on the same types of incidents as the NRA stories and covering the same time period.¹⁴

12. To identify relevant news stories to include in our analysis, we performed a comprehensive search of published news stories using Factiva, an online news reporting service

¹⁴ This analysis was initially conducted to research issues regarding self-defense in the home, which was a focus of federal Second Amendment jurisprudence before the 2022 *New York State Rifle & Pistol Association v. Bruen* Supreme Court decision. The analysis of the NRA Armed Citizen database incidents described above indicates that the number of shots fired in self-defense outside the home is similar to those inside the home.

and archive owned by Dow Jones, Inc. that aggregates news content from nearly 33,000 sources.¹⁵ The search was designed to return stories about the types of incidents that are the focus of the NRA Armed Citizen database and that Plaintiffs claim the Delaware law impedes – in particular, the use of firearms for self-defense.¹⁶ The search identified all stories that contained the following keywords in the headline or lead paragraph: one or more words from “gun,” “shot,” “shoot,” “fire,” or “arm” (including variations on these keywords, such as “shooting” or “armed”), plus one or more words from “broke in,” “break in,” “broken into,” “breaking into,” “burglar,” “intruder,” or “invader” (including variations on these keywords) and one or more words from “home,” “apartment,” or “property” (including variations on these keywords).¹⁷ The search criteria match approximately 90% of the NRA stories on self-defense with a firearm in the home, and an analysis of the 10% of stories that are not returned by the search shows that the typical number of shots fired in these incidents was no different than in other incidents. The search covered the same period used in our analysis of incidents in the NRA Armed Citizen database (January 2011 to May 2017). The region for the Factiva search was set

¹⁵ Factiva is often used for academic research. For example, a search for the term “Factiva” on Google Scholar yields over 28,000 results. As another example, a search on Westlaw yields at least 83 expert reports that conducted news searches using Factiva.

¹⁶ NRA Institute for Legislative Action, Armed Citizens, <https://www.naila.org/gun-laws/armed-citizen/>, accessed May 28, 2017. See, also, Amended Complaint, ¶¶ 1-7.

¹⁷ The precise search string used was: (gun* or shot* or shoot* or fire* or arm*) and (“broke in” or “break in” or “broken into” or “breaking into” or burglar* or intrud* or inva*) and (home* or “apartment” or “property”). An asterisk denotes a wildcard, meaning the search includes words which have any letters in place of the asterisk. For example, a search for shoot* would return results including “shoots,” “shooter” and “shooting.” The search excluded duplicate stories classified as “similar” on Factiva.

to “United States.” The search returned approximately 35,000 stories for the period January 2011 to May 2017.¹⁸

13. Using a random number generator, a random sample of 200 stories was selected for each calendar year, yielding 1,400 stories in total.¹⁹ These 1,400 stories were reviewed to identify those stories that were relevant to the analysis, *i.e.*, incidents of self-defense with a firearm in or near the home. This methodology yielded a random selection of 200 news stories describing incidents of self-defense with a firearm in the home out of a population of approximately 4,800 relevant stories.²⁰ Thus, out of the over 70 million news stories aggregated by Factiva between January 2011 and May 2017, approximately 4,800 news stories were on incidents of self-defense with a firearm in the home. We analyzed a random selection of 200 of these stories.

14. For each news story, the city/county, state and number of shots fired were tabulated. When tabulating the number of shots fired, we used the same methodology as we used

¹⁸ The effect of using alternative keywords was considered. For example, removing the second category (“broke in” or “break in” or “broken into” or “breaking into” or burglar* or intrud* or inva*) and including incidents in which the assailant was already inside the home and/or was known to the victim was considered. *A priori*, there was no reason to believe that a larger number of shots would be used in these incidents and based on an analysis of the NRA stories we found that the number of shots fired in incidents when defending against someone already in the home was not different than those with an intruder.

¹⁹ The random numbers were generated by sampling with replacement.

²⁰ The approximately 4,800 relevant news stories were estimated by calculating the proportion of relevant news stories from the 200 randomly selected stories each year and applying that proportion to the number of results returned by the search for each year of the analysis. For example, in 2017, 33 out of 200 (17%) randomly selected news stories involved incidents of self-defense with a firearm in the home. Applying that proportion to the 1,595 results from the Factiva search in 2017 yields 263 relevant news stories in 2017. This process was repeated every year to arrive at a total of 4,841 relevant news stories from 2011-2017.

to analyze stories in the NRA Armed Citizen database.²¹ We then identified other stories describing the same incident on Factiva based on the date, location and other identifying information, and recorded the number of times that each incident was covered by Factiva news stories.

15. To determine the average number of shots fired per *incident*, we first determined the average number of shots fired per *story* and then analyzed the number of stories per incident. According to our study of a random selection from approximately 4,800 relevant stories on Factiva describing incidents of self-defense with a firearm in the home, the average number of shots fired per story was 2.61. This is not a measure of the average shots fired per *incident*, however, because the number of stories covering an incident varies, and the variation is not independent of the number of shots fired. We found that there was a statistically significant relationship between the number of shots fired in an incident and the number of news stories covering an incident.²² We found that on average the more shots fired in a defensive gun use incident, the greater the number of stories covering an incident. For example, as shown in the table below, we found that incidents in Factiva news stories with zero shots fired were covered

²¹ When the exact number of shots fired was not specified, we used the average for the most relevant incidents with known number of shots. For example, if the story stated that “shots were fired” this would indicate that at least two shots were fired and thus we used the average number of shots fired in all incidents in which two or more shots were fired and the number of shots was specified.

²² Based on a linear regression of the number of news stories as a function of the number of shots fired, the results were statistically significant at the 1% level (more stringent than the 5% level commonly used by academics and accepted by courts. See, for example, Freedman, David A., and David H. Kaye, “Reference Guide on Statistics,” *Reference Manual on Scientific Evidence* (Washington, D.C.: The National Academies Press, 3rd ed., 2011), pp. 211-302, and Fisher, Franklin M., “Multiple Regression in Legal Proceedings,” 80 *Columbia Law Review* 702 (1980).)

on average by 1.8 news stories, while incidents with six or more shots fired were covered on average by 10.4 different news stories.

**Average Number of News Stories by Number of Shots Fired
In Factiva Stories on Incidents of Self-Defense with a Firearm
January 2011 - May 2017**

Number of Shots Fired By Defender	Average Number of News Stories
0	1.8
1 to 2	2.8
3 to 5	3.8
6 or more	10.4

Notes and Sources:

Based on stories describing defensive gun use in a random selection of Factiva stories between 2011 to May 2017 using the search string: (gun* or shot* or shoot* or fire* or arm*) and ("broke in" or "break in" or "broken into" or "breaking into" or burglar* or intrud* or inva*) and (home* or "apartment" or "property"), with region set to "United States" and excluding duplicate stories classified as "similar" on Factiva. Methodology for tabulation of shots fired as per footnote 21.

16. After adjusting for this disparity in news coverage, we find that the average number of shots fired per incident covered is 2.34.²³ Note that this adjustment does not take into

²³ The adjustment reflects the probability that a news story on a particular incident would be selected at random from the total population of news stories on incidents of self-defense with a firearm in the home. The formula used for the adjustment is:

$$\frac{\sum_{i=1}^n \left(\text{Shots Fired}_i \times \frac{R_i}{C_i} \right)}{\sum_{i=1}^n \left(\frac{R_i}{C_i} \right)}$$

where:

n = random selection of news stories on incidents of self-defense with a firearm in the home

R_i = number of search results on Factiva in the calendar year of incident i

C_i = number of news stories covering incident i

account the fact that some defensive gun use incidents may not be picked up by *any* news story. Given the observed relationship that there are more news stories when there are more shots fired, one would expect that the incidents that are not written about would on average have fewer shots than those with news stories. Therefore, the expectation is that these results, even after the adjustment, are biased upward (*i.e.*, estimating too high an average number of shots and underestimating the percent of incidents in which no shots were fired).

17. As shown in the table below, according to the study of Factiva news stories, in 11.6% of incidents the defender did not fire any shots, and simply threatened the offender with a gun. In 97.3% of incidents the defender fired 5 or fewer shots. There were no incidents where the defender was reported to have fired more than 10 or 17 bullets.

**Number of Shots Fired in Self-Defense in the Home
Based on Random Selection of Articles from Factiva
January 2011 - May 2017**

	<u>Incidents in the Home</u>
Estimated population of news reports in Factiva on self-defense with a firearm in the home	4,841
Random selection of news reports	200
Average Number of Shots Fired	2.34
Median Number of Shots Fired	2.03
Number of Incidents with No Shots Fired	23
Percent of Incidents with No Shots Fired	11.6%
Number of Incidents with <=5 Shots Fired	195
Percent of Incidents with <=5 Shots Fired	97.3%
Number of Incidents with >10 Shots Fired	0
Percent of Incidents with >10 Shots Fired	0.0%
Number of Incidents with >17 Shots Fired	0
Percent of Incidents with >17 Shots Fired	0.0%

Notes and Sources:

Based on news stories describing defensive gun use in a random sample of Factiva stories 2011 to May 2017 using search string (gun* or shot* or shoot* or fire* or arm*) and ("broke in" or "break in" or "broken into" or "breaking into" or burglar* or intrud* or inva*) and (home* or apartment or "property") with region set to United States and excluding duplicate stories classified as "similar."

Calculated using weights reflecting the probability that a news story on a particular incident would be selected at random from the total population of news stories on incidents of self-defense with a firearm in the home.

18. In sum, an analysis of incidents in the NRA Armed Citizen database, as well as our own study of a random sample from approximately 4,800 news stories describing incidents of self-defense with a firearm, indicates that it is extremely rare for a person, when using a firearm in self-defense, to fire more than 10 or 17 rounds.

2. Use of assault rifles in self-defense according to FBI active shooter incidents

19. I have been asked to analyze the “Active Shooter Incidents” reports published by the Federal Bureau of Investigation (“FBI”).²⁴ In particular, I have been asked to analyze the use of assault rifles by private citizens in active shooter incidents. According to this analysis, citizens rarely use a firearm, and even less frequently use an assault rifle, to defend themselves during active shooter incidents.

20. The FBI defines an active shooter as “one or more individuals actively engaged in killing or attempting to kill people in a populated area” and notes that “the active aspect of the definition inherently implies the ongoing nature of an incident, and thus the potential for the response to affect the outcome, whereas a mass killing is defined as three or more killings in a single incident.”²⁵ The FBI uses its own “holdings and repositories,” as well as “official law enforcement reports” and “open-sourced data” to identify active shooter incidents that meet their criteria.²⁶ - For each incident, the FBI reports the date, location, age and sex of the shooter, and number of injuries and fatalities. The FBI also identifies incidents involving intervention by

²⁴ This analysis is similar to an analysis conducted by Columbia University Professor Louis Klarevas and yields similar results. See, for example, Declaration of Louis Klarevas in *National Association for Gun Rights et al., v. City of Highland Park, Illinois*, filed on January 19, 2023, ¶¶ 23-26.

²⁵ “Active Shooter Incidents in the United States in 2021,” *FBI*, May 2022, p. 2.

²⁶ “Active Shooter Incidents in the United States in 2021,” *FBI*, May 2022, p. 2. The FBI excludes gun-related incidents that are the result of “self-defense, gang violence, drug violence, contained residential or domestic disputes, controlled hostage situations, crossfire as a byproduct of another ongoing criminal act, or an action that appeared to not have put other people in peril.” The FBI notes that the “there is no mandated database collection or central intake point for reporting active shooter incidents, which exists for other crimes.”

civilians, including instances in which armed civilians used firearms to defend themselves or engage with the shooter.²⁷

21. According to the FBI, over the 22-year period from 2000 to 2021, there were 434 active shooter incidents. In 15, or 3.5%, of these incidents armed civilians defended themselves or engaged with the shooter.²⁸ Of these 15 incidents, 12, or 80%, involved armed civilians using a handgun as defense and only 1, or 6.6%, involved using an assault rifle.²⁹ Of the remaining 2 incidents, one involved a bolt-action rifle and the other a shotgun. Overall, only 1, or 0.2%, of the 434 active shooter incidents identified by the FBI involved civilians defending themselves with an assault rifle.

3. Percent of incidents in which rifles were used in self-defense according to Heritage Defensive Gun Uses Database

22. I have been asked to analyze The Heritage Foundation’s “Defensive Gun Uses in the U.S.” database (“Heritage DGU Database”), a database of defensive gun incidents that was first published after my research on the number of rounds used by individuals in self-defense was performed.³⁰ In particular, I have been asked to analyze the percent of incidents in which rifles were used in self-defense according to the Heritage DGU Database. The analysis of the Heritage DGU Database indicates that it is rare for a rifle to be used in self-defense.

²⁷ See, for example, “Active Shooter Incidents in the United States in 2021,” *FBI*, May 2022, pp. 2, 11-12.

²⁸ Excludes incidents where the armed private citizens were security guards.

²⁹ The firearm type used by the armed private citizen was determined by descriptions in the FBI’s Active Shooter reports, as well as news articles from Factiva and Google.

³⁰ “Defensive Gun Uses in the U.S.,” *The Heritage Foundation*, as of October 7, 2022, <https://datavisualizations.heritage.org/firearms/defensive-gun-uses-in-the-us>.

23. The Heritage Foundation is a think tank focused on “formulat[ing] and promot[ing] public policies based on the principles of free enterprise, limited government, individual freedom, traditional American values, and a strong national defense.”³¹ According to The Heritage Foundation, “[t]he right of the people to keep and bear arms is a fundamental part of American liberty, serving as an important individual defense against crime and a collective defense against tyranny.”³²

24. In April 2020, The Heritage Foundation began publishing and periodically updating a database of news stories describing incidents in the U.S. in which individuals purportedly defended themselves using firearms.³³ The Heritage Foundation notes that its database is not comprehensive but meant to “highlight” stories of successful self-defense.^{34,35} As a result, one would expect the Heritage DGU Database to be more likely to identify successful uses of rifles in self-defense than a randomized review of news stories.

25. As of October 7, 2022, the Heritage DGU Database included 2,714 incidents from January 1, 2019 through October 6, 2022.³⁶ The Heritage DGU Database codes the following information for each incident:³⁷

³¹ “About Heritage,” *The Heritage Foundation*, <https://www.heritage.org/about-heritage/mission>.

³² “Firearms,” *The Heritage Foundation*, <https://www.heritage.org/firearms>.

³³ “Defensive Gun Uses in the U.S.,” *The Heritage Foundation*.

³⁴ “Defensive Gun Uses in the U.S.,” *The Heritage Foundation*.

³⁵ Note that a review of the news stories cited in the database indicates that a number of the incidents may not involve individuals defending themselves. For example, in one incident (“Two Burglary Suspects Caught By Victim’s Brother And Friend, Held At Gunpoint For Police,” *5NewsOnline*, February 11, 2019), a homeowner’s brother and friend appear to have found and apprehended burglars on the roadside.

³⁶ “Defensive Gun Uses in the U.S.,” *The Heritage Foundation*.

³⁷ “Defensive Gun Uses in the U.S.,” *The Heritage Foundation*.

- Date of the incident;
- Website link to the news story;
- Location (city and state);
- Context (e.g., domestic violence, home invasion, robbery, etc.);
- Whether the defender had a concealed-carry permit;
- Whether there were multiple assailants;
- Whether shots were fired; and
- Firearm type (handgun, shotgun, rifle, pellet rifle, long gun, or unknown).³⁸

26. I performed an analysis of all 2,714 incidents in the Heritage DGU Database as of

October 7, 2022 to determine what number and percent of the incidents involved a rifle. I found there were 51 incidents indicating a rifle was involved. These 51 incidents represent 2% of all incidents in the database and 4% of incidents with a known gun type.³⁹ The table below shows the breakdown of incidents by coded firearm type for the 2,714 incidents.

³⁸ A review of the data and linked news stories from the Heritage DGU Database indicates that the firearm type corresponds to the firearm associated with the defender.

³⁹ This analysis is based on The Heritage Foundation's coding of these incidents. We have not independently verified the coding of these incidents.

**The Heritage Foundation
Defensive Gun Uses Database**

Firearm Type	Incidents¹	% of Total	% of Known
(1)	(2)	(3)	(4)
Handgun	1,113	41%	90%
Shotgun	78	3%	6%
Rifle	51	2%	4%
Long Gun	1	0%	0%
Pellet Rifle	1	0%	0%
Unknown	1,473	54%	
Total known:	1,241		
Total:	2,714		

Source:

"Defensive Gun Uses in the U.S.," *The Heritage Foundation*.

Data as of October 7, 2022.

¹ Note that three incidents are coded as having more than one firearm type and thus the sum by firearm type is larger than the total number of incidents.

27. I conducted the same analysis of the Heritage DGU Database excluding incidents that occurred in states that have restrictions on assault weapons. In particular, I excluded incidents in California, Connecticut, Hawaii, Maryland, Massachusetts, New Jersey, and New York, as well as Washington D.C.⁴⁰ In states without assault weapons restrictions, the Heritage DGU Database has 48 incidents indicating a rifle was involved. These 48 incidents represent 2%

⁴⁰ See, "Assault Weapons," *Giffords Law Center*, <https://giffords.org/lawcenter/gun-laws/policy-areas/hardware-ammunition/assault-weapons/>. Delaware is not excluded since restrictions in Delaware were enacted in June 2022. See, "Governor Carney Signs Package of Gun Safety Legislation," *Delaware.gov*, June 30, 2022, <https://news.delaware.gov/2022/06/30/governor-carney-signs-package-of-gun-safety-legislation/>.

of incidents in these states and 4% of incidents with a known gun type in these states. The table below shows the breakdown of incidents by coded firearm type for states that do not restrict assault weapons.

The Heritage Foundation Defensive Gun Uses Database States Without Assault Weapon Restrictions			
Firearm Type	Incidents¹	% of Total	% of Known
(1)	(2)	(3)	(4)
Handgun	1,033	41%	90%
Shotgun	63	3%	6%
Rifle	48	2%	4%
Long Gun	0	0%	0%
Pellet Rifle	1	0%	0%
Unknown	1,357	54%	
Total known:	1,142		
Total:	2,499		

Source:
 "Defensive Gun Uses in the U.S.," *The Heritage Foundation*. Data as of October 7, 2022. Excludes the following states with assault weapon restrictions: California, Connecticut, Hawaii, Maryland, Massachusetts, New Jersey, and New York as well as Washington D.C. Classification from Giffords Law Center. Incidents in Delaware not excluded as restrictions were enacted in June 2022.

¹ Note that three incidents are coded as having more than one firearm type and thus the sum of the individual firearm types is larger than the total number of incidents.

B. Public Mass Shootings

28. We analyzed the use of assault weapons and large-capacity magazines⁴¹ in public mass shootings using four sources for identifying public mass shootings: Mother Jones,⁴² the Citizens Crime Commission of New York City,⁴³ the Washington Post⁴⁴ and the Violence Project.^{45, 46} The analysis focused on public mass shootings because it is my understanding that

⁴¹ My analysis is based on the definitions of assault weapons (“Assault Weapons”) and large capacity magazines (“Large-Capacity Magazines”) provided by California law, specifically: California Penal Code sections 30510, 30515 and 32310, and California Code of Regulations, title 11, section 5499. California law defines Large Capacity Magazines as magazines capable of holding more than ten rounds and Assault Weapons based on either their “make and model” or on certain “features.” See, for example, California Department of Justice: “What is considered an assault weapon under California law?” and “What are AK and AR-15 series weapons?” <https://oag.ca.gov/firearms/regagunfaqs>, accessed October 25, 2018.

⁴² “US Mass Shootings, 1982-2022: Data From Mother Jones’ Investigation,” Mother Jones, updated November 23, 2022, <http://www.motherjones.com/politics/2012/12/mass-shootings-mother-jones-full-data>.

⁴³ “Mayhem Multiplied: Mass Shooters and Assault Weapons,” Citizens Crime Commission of New York City, February 2018 update. Additional details on the mass shootings were obtained from an earlier source by the Citizens Crime Commission. “Mass Shooting Incidents in America (1984-2012),” Citizens Crime Commission of New York City, <http://www.nycrimecommission.org/mass-shooting-incidents-america.php>, accessed June 1, 2017.

⁴⁴ “The terrible numbers that grow with each mass shooting,” The Washington Post, updated May 12, 2021.

⁴⁵ “Mass Shooter Database,” The Violence Project, <https://www.theviolenceproject.org/mass-shooter-database/>, updated May 14, 2022.

⁴⁶ When I began research in 2013 on mass shootings, I found Mother Jones and Citizens Crime Commission to maintain the most comprehensive lists of relevant mass shootings. More recently, two additional sources, the Washington Post and The Violence Project, have compiled lists of public mass shootings. The Violence Project began work on its mass shootings database in September 2017 and its database first went online in November 2019, while the Washington Post first published its mass shootings database in February 2018. There is substantial overlap between the mass shootings in all four sources. For example, the Mother Jones data contains 93% of the mass shootings in the Citizens Crime Commission data for the years covered by both data sources, 1984 to 2016, while the Washington Post contains 94% of the mass shootings in The Violence Project data for the years covered by both data sources, 1966 to 2019.

the state of Delaware is concerned about public mass shootings and enacted the challenged law, in part, to address the problem of public mass shootings.⁴⁷

29. The type of incident considered a mass shooting is generally consistent across the four sources. In particular, all four sources consider an event a mass shooting if four or more people were killed in a public place in one incident and exclude incidents involving other criminal activity such as a robbery.⁴⁸

⁴⁷ See Delaware's HB 450, which discusses numerous public mass shootings and notes that "assault-style weapons have been used disproportionately to their ownership in mass shootings."

⁴⁸ Citizen Crime Commission describes a mass shooting as "four or more victims killed" in "a public place" that were "unrelated to another crime (e.g., robbery, domestic violence)." Citizen Crime notes that its sources include "news reports and lists created by government entities and advocacy groups." "Mayhem Multiplied: Mass Shooters and Assault Weapons," Citizens Crime Commission of New York City, February 2018 update.

Mother Jones describes a mass shooting as "indiscriminate rampages in public places resulting in four or more victims killed by the attacker," excluding "shootings stemming from more conventionally motivated crimes such as armed robbery or gang violence." Although in January 2013 Mother Jones changed its definition of mass shooting to include instances when three or more people were killed, for this declaration we only analyzed mass shootings where four or more were killed to be consistent with the definition of the other three sources. "A Guide to Mass Shootings in America," Mother Jones, updated November 23, 2022, <http://www.motherjones.com/politics/2012/07/mass-shootings-map>. See also, "What Exactly is a Mass Shooting," Mother Jones, August 24, 2012. <http://www.motherjones.com/mojo/2012/08/what-is-a-mass-shooting>.

The Washington Post describes a mass shooting as "four or more people were killed, usually by a lone shooter" excluding "shootings tied to robberies that went awry" and "domestic shootings that took place exclusively in private homes." The Washington Post notes that its sources include "Grant Duwe, author of 'Mass Murder in the United States: A History,' Mother Jones and Washington Post research," as well as "Violence Policy Center, Gun Violence Archive; FBI 2014 Study of Active Shooter Incidents; published reports." "The terrible numbers that grow with each mass shooting," The Washington Post, updated May 12, 2021, <https://www.washingtonpost.com/graphics/2018/national/mass-shootings-in-america/>.

The Violence Project indicates that it uses the Congressional Research Service definition of a mass shooting: - "a multiple homicide incident in which four or more victims are murdered with firearms—not including the offender(s)—within one event, and at least some of the murders occurred in a public location or locations in close geographical proximity (e.g., a workplace, school, restaurant, or other public settings), and the murders are not attributable to any other

30. Each of the four sources contains data on mass shootings covering different time periods. The Mother Jones data covers 112 mass shootings from 1982 to October 13, 2022,⁴⁹ the Citizens Crime Commission data covers 80 mass shootings from 1984 to February 2018,⁵⁰ the Washington Post data covers 185 mass shootings from 1966 to May 12, 2021,⁵¹ and The Violence Project data covers 182 mass shootings from 1966 to May 14, 2022.^{52, 53}

underlying criminal activity or commonplace circumstance (armed robbery, criminal competition, insurance fraud, argument, or romantic triangle).” The Violence Project notes that its sources include “Primary Sources: Written journals / manifestos / suicide notes etc., Social media and blog posts, Audio and video recordings, Interview transcripts, Personal correspondence with perpetrators” as well as “Secondary Sources (all publicly available): Media (television, newspapers, magazines), Documentary films, Biographies, Monographs, Peer-reviewed journal articles, Court transcripts, Law Enforcement records, Medical records, School records, Autopsy reports.” “Mass Shooter Database,” The Violence Project, <https://www.theviolenceproject.org/methodology/>, accessed January 17, 2020.

⁴⁹ “A Guide to Mass Shootings in America,” Mother Jones, updated November 23, 2022, <http://www.motherjones.com/politics/2012/07/mass-shootings-map>. Excludes mass shootings where only three people were killed. Note this analysis of the Mother Jones data may not match other analyses because Mother Jones periodically updates its historical data.

⁵⁰ “Mayhem Multiplied: Mass Shooters and Assault Weapons,” *Citizens Crime Commission of New York City*, February 2018 update.

⁵¹ “The terrible numbers that grow with each mass shooting,” *The Washington Post*, updated May 12, 2021, <https://www.washingtonpost.com/graphics/2018/national/mass-shootings-in-america/>.

⁵² “Mass Shooter Database,” *The Violence Project* <https://www.theviolenceproject.org/mass-shooter-database/>, updated May 14, 2022.

⁵³ Note that I have updated this mass shooting analysis to include more recent incidents, as well as more recently available details. In my 2017 declaration in *Virginia Duncan et al. v. California Attorney General*, I included data on mass shootings through April 2017. In my 2018 declaration in *Rupp v. California Attorney General*, I updated the analysis to include data on mass shootings through September 2018. The analyses in both of these declarations included mass shootings only from Mother Jones and the Citizen Crime Commission. In my 2020 declaration in *James Miller et al. v. California Attorney General*, I updated the analysis to include mass shootings through December 2019 and added mass shootings from two more sources, the Washington Post and the Violence Project. The number of mass shootings, as well as some details about the shootings, are not identical across these declarations for three main reasons. First, I have updated the analysis to include more recent incidents as well as more recently available details. Second, starting in 2020, I added two more sources (Washington Post

31. Note that the two more recently compiled sources of mass shootings, the Washington Post and The Violence Project, include additional mass shootings that were not covered by either Mother Jones or Citizens Crime Commission. In general, we found that these additional mass shootings were less covered by the media and involved fewer fatalities and/or injuries than the ones previously identified by Mother Jones or Citizens Crime Commission. For example, using the mass shooting data for the period 1982 through 2019, we found that the median number of news stories for a mass shooting included in Mother Jones and/or Citizen Crime Commission was 317, while the median for the additional mass shootings identified in the Washington Post and/or The Violence Project was 28.⁵⁴ In addition, using the mass shooting data through 2019, we found an average of 21 fatalities or injuries for a mass shooting included in Mother Jones and/or Citizen Crime Commission, while only 6 fatalities or injuries for the additional mass shootings identified in the Washington Post and/or The Violence Project.

32. We combined the data from the four sources for the period 1982 through October 2022, and searched news stories on each mass shooting to obtain additional details on the types of weapons used as well as data on shots fired where available. We compared the details on the weapons used in each shooting to the list of prohibited firearms and features specified in California law to identify, based on this publicly available information, which mass shootings involved the use of Assault Weapons. In addition, we identified, based on this publicly available

and Violence Project), which include additional mass shootings and details not included in the initial sources. Third, even though Mother Jones included instances when three or more people were killed, for my declarations and reports starting in 2020, I only included mass shootings where four or more were killed to be consistent with the definition of the other three sources.

⁵⁴ The search was conducted over all published news stories on Factiva. The search was based on the shooter's name and the location of the incident over the period from one week prior to three months following each mass shooting.

information, which mass shootings involved the use of Large-Capacity Magazines. See attached **Exhibit B** for a summary of the combined data, and **Exhibit C** for a summary of the weapons used in each public mass shooting based on Mother Jones, Citizens Crime Commission, the Washington Post, the Violence Project, and news reports.⁵⁵

1. Use of Assault Weapons in public mass shootings

33. Based on the 179 mass shootings through October 2022, we found that Assault Weapons are often used in public mass shootings. Whether an Assault Weapon was used in a mass shooting can be determined in 153 out of the 179 incidents (85%) considered in this analysis. Out of these 153 mass shootings, 36 (or 24%) involved Assault Weapons. Even assuming the mass shootings where it is not known whether an Assault Weapon was used *all* did not involve an Assault Weapon, 36 out of 179 mass shootings, or 20%, involved Assault Weapons.

34. Based on our analysis, casualties were higher in the mass shootings that involved Assault Weapons than in other mass shootings. In particular, we found an average number of fatalities or injuries of 36 per mass shooting with an Assault Weapon versus 10 for those without. Focusing on just fatalities, we found an average number of fatalities of 12 per mass shooting with an Assault Weapon versus 6 for those without. (See table below.)

2. Use of Large-Capacity Magazines in public mass shootings

35. Based on the 179 mass shootings through October 2022, we found that Large-Capacity Magazines (those with a capacity to hold more than 10 rounds of ammunition) are often used in public mass shootings. Magazine capacity is known in 115 out of the 179 mass

⁵⁵ Note that the Citizens Crime Commission data was last updated in February 2018 and the Washington Post was last updated in May 2021.

shootings (or 64%) considered in this analysis. Out of the 115 mass shootings with known magazine capacity, 73 (or 63%) involved Large-Capacity Magazines. Even assuming the mass shootings with unknown magazine capacity *all* did not involve Large-Capacity Magazines, 73 out of 179 mass shootings or 41% of mass shootings involved Large-Capacity Magazines. (See table below.)

36. Based on our analysis, casualties were higher in the mass shootings that involved weapons with Large-Capacity Magazines than in other mass shootings. In particular, we found an average number of fatalities or injuries of 25 per mass shooting with a Large-Capacity Magazines versus 9 for those without. Focusing on just fatalities, we found an average number of fatalities of 10 per mass shooting with a Large-Capacity Magazines versus 6 for those without. (See table below.)

37. In addition, we found that casualties were higher in the mass shootings that involved both Assault Weapons *and* Large-Capacity Magazines. In particular, we found an average number of fatalities or injuries of 40 per mass shooting with both an Assault Weapon and a Large-Capacity Magazine versus 8 for those without either. Focusing on just fatalities, we found an average number of fatalities of 13 per mass shooting with both an Assault Weapon and a Large-Capacity Magazine versus 6 for those without either. (See table below.)

**Numbers of Fatalities and Injuries in Public Mass Shootings
1982 - October 2022**

Weapon Used	# of	Average # of		
	Incidents	Fatalities	Injuries	Total
Assault Weapon	36	12	24	36
No Assault Weapon	117	6	4	10
Unknown	26	5	3	9
Large-Cap. Mag.	73	10	16	25
No Large-Cap. Mag.	42	6	3	9
Unknown	64	5	3	7
Assault Weapon & Large-Cap. Mag.	31	13	27	40
Large-Cap. Mag. Only ¹	36	8	7	15
No Assault Weapon or Large-Cap. Mag. ²	41	6	3	8
Unknown ³	71	5	3	8

Notes and Sources:

Casualty figures exclude the shooter. Assault Weapon and large-capacity magazine classification and casualties updated based on review of stories from Factiva/Google searches.

¹ Shootings involving large-capacity magazine and no Assault Weapon.

² Shootings involving neither a large-capacity magazine nor Assault Weapon.

³ Shootings where it is either unknown whether a large-capacity magazine was involved or unknown whether an Assault Weapon was involved.

38. Our results are consistent with those of other studies that have analyzed mass shootings. Note that although the other studies are based on alternate sets of mass shootings, including covering different years and defining mass shootings somewhat differently, the results are similar in finding that fatalities and injuries are larger in mass shootings in which large capacity magazines and assault weapons are involved. A 2019 academic article published in the American Journal of Public Health by Klarevas et al. found that “[a]ttacks involving LCMs

resulted in a 62% higher mean average death toll.⁵⁶ This study found an average number of fatalities of 11.8 per mass shooting with a large-capacity magazine versus 7.3 for those without. The results in this study were based on 69 mass shootings between 1990 and 2017.⁵⁷ An analysis of the mass shootings detailed in a 2016 article by Gary Kleck yielded similar results (21 average fatalities or injuries in mass shootings involving large-capacity magazines versus 8 for those without).⁵⁸ The Kleck study covered 88 mass shooting incidents between 1994 and 2013.⁵⁹ In a 2018 study, Koper et al. found that mass shootings involving assault weapons and large-capacity magazines resulted in an average of 13.7 victims versus 5.2 for other cases.⁶⁰ The Koper et al. study covered 145 mass shootings between 2009 and 2015.⁶¹ The table below summarizes their results.

⁵⁶ Louis Klarevas, Andrew Conner, and David Hemenway, “The Effect of Large-Capacity Magazine Bans on High-Fatality Mass Shootings, 1990–2017,” *American Journal of Public Health* (2019).

⁵⁷ The Klarevas et al. study defines mass shootings as “intentional crimes of gun violence with 6 or more victims shot to death, not including the perpetrators” and, unlike my analysis, does not exclude incidents in private places or incidents involving other criminal activity such as robbery.

⁵⁸ Kleck, Gary, “Large-Capacity Magazines and the Casualty Counts in Mass Shootings: The Plausibility of Linkages,” 17 *Justice Research and Policy* 28 (2016).

⁵⁹ The Kleck study defines a mass shooting as “one in which more than six people were shot, either fatally or nonfatally, in a single incident.”

⁶⁰ Koper et al., “Criminal Use of Assault Weapons and High-Capacity Semiautomatic Firearms: an Updated Examination of Local and National Sources,” *Journal of Urban Health* (2018).

⁶¹ The Koper et al. study defined mass shooting as “incidents in which four or more people were murdered with a firearm, not including the death of the shooter if applicable and irrespective of the number of additional victims shot but not killed.”

Comparison of Studies on the Use of Large-Capacity Magazines in Mass Shootings						
Source	Criteria	# of Incidents	Avg. # of Fatalities + Injuries / Fatalities			
(1)	(2)	(3)	(4)	(5)	With LCM	Without LCM
Allen (2020) ¹	at least 4 <u>killed</u> ²	Includes shootings "in a public place in one incident, and exclude[s] incidents involving other criminal activity such as a robbery"	1982-2019	161	27 / 10	9 / 6
Kleck et al. (2016) ³	at least 6 <u>shot</u>	Excludes "spree shootings" and includes shootings in both "public" and "private" places	1994-2013	88	21 / n/a	8 / n/a
Klarevas et al. (2019) ⁴	at least 6 <u>killed</u> ²	Includes "intentional crimes of gun violence"	1990-2017	69	n/a / 12	n/a / 7
Koper et al. (2018) ⁵	at least 4 <u>killed</u> ²	Includes shootings in both public and private places	2009-2015	145	14 / n/a	5 / n/a

Notes and Sources:

¹ Declaration of Lucy P. Allen in Support of Defendants' Opposition to Motion for Preliminary Injunction in *James Miller et al. v. Xavier Becerra et al.*, dated January 23, 2020.

² Excluding shooter.

³ Kleck, Gary, "Large-Capacity Magazines and the Casualty Counts in Mass Shootings: The Plausibility of Linkages," 17 Justice Research and Policy 28 (2016).

⁴ Klarevas et al., "The Effect of Large-Capacity Magazine Bans on High-Fatality Mass Shootings 1990-2017," American Journal of Public Health (2019).

⁵ Koper et al., "Criminal Use of Assault Weapons and High-Capacity Semiautomatic Firearms: an Updated Examination of Local and National Sources," Journal of Urban Health (2018). Note that the Koper et al study includes shootings involving both LCM and assault weapons.

3. Number of rounds fired in public mass shootings with Assault Weapons or Large-Capacity Magazines

39. The data on public mass shootings indicates that it is common for offenders to fire more than seventeen rounds when using an Assault Weapon. Of the 36 mass shootings we analyzed through October 2022 that are known to have involved an Assault Weapon, there are 24 in which the number of shots fired is known. Shooters fired more than seventeen rounds in 22 out of the 24 incidents (or 92%), and the average number of shots fired in those incidents was 161.

40. In addition, the data indicates that it is common for offenders to fire more than seventeen rounds when using a gun with a Large-Capacity Magazine in mass shootings. Of the 73 mass shootings that are known to have involved a Large-Capacity Magazine, there are 49 in

which the number of shots fired is known. Shooters fired more than seventeen rounds in 41 of the 49 incidents (or 84%), and the average number of shots fired in those incidents was 116.

4. Percent of mass shooters' guns legally obtained

41. The data on public mass shootings indicates that the majority of guns used in these mass shootings were obtained legally.⁶² Of the 179 mass shootings analyzed through October 2022, there are 112 where it can be determined whether the gun was obtained legally. According to the data, shooters in 79% of mass shootings obtained their guns legally (89 of the 112 mass shootings) and 80% of the guns used in these 112 mass shootings were obtained legally (202 of the 252 guns). (Note that even if one assumes that *all* of the mass shootings where it is not known were assumed to be illegally obtained, then one would find 50% of the mass shootings and 62% of the guns were obtained legally.)

Pursuant to 28 U.S.C. § 1746, I declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct.

Executed on January 30, 2023



Lucy P. Allen

⁶² The determination of whether guns were obtained legally is based on Mother Jones and Washington Post reporting.